

COLD-WORKED STEELS WITH PACKET-LATH MARTENSITE/AUSTENITE MICROSTRUCTURE

ABSTRACT OF THE DISCLOSURE

Strain-hardened steel alloys having a high tensile strength are prepared by cold working of alloys whose microstructure includes grains in which laths of martensite alternate with thin films of stabilized austenite. Due to the high dislocation density of this microstructure and the tendency of the strains to move between the martensite and austenite phases, the strains created by cold working provide the microstructure with unique mechanical properties including a high tensile strength. Surprisingly, this is achieved without the need for intermediate heat treatments (patenting, in the case of steel wire) of the steel between cold working reductions.

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